

Friday September 22, 2023 (1st day)

08:30 – 10:00

REGISTRATION

10:00 -10:10

OPENING

K. Nakayama

Chair: T. Shiota

SESSION I

STRESS-INDUCED TRIBOCHEMISTRY

Chair: N.D. Spencer & T. Maruyama

10:10 -10:35 (25 min.)

O-01 Coupling of Chemistry and Mechanics in Tribological Contacts

Izabela Szlufarska¹, Zhuohan Li² and Khagendra Baral¹ (¹*University of Wisconsin, USA*, ²*Lawrence Berkeley National Laboratory, USA*)

10:35 -11:00 (25 min.)

O-02 Understanding the Effect of Forces on Tribochemical Reaction Rates

W.T. Tysoe¹ (¹*University of Wisconsin-Milwaukee, USA*)

SESSION II

TRIBOCHEMISTRY UNDER SHEAR FLOW

Chair: A. Rossi & T. Shiota

11:00 - 11:25 (25 min.)

O-03 Atomistic Simulations to Track the Frictional Response of Confined Fluids under Severe Conditions

N. Fillot¹, R. Xu¹, A. Porrás-Vázquez¹ and L. Martinie¹ (¹*INSA Lyon, France*)

11:25 - 11:50 (25 min.)

O-04 Molecular Mechanisms of Hydrogel Friction

Jan Mees¹, Rok Simic², Thomas C. O'Connor³, Nicholas D. Spencer² and Lars Pastewka¹ (¹ *University of Freiburg, Germany*, ² *Carnegie Mellon University, USA*, ³ *ETH Zürich, Switzerland*)

< **Lunch (70 min)** >

SESSION III TRIBOCHEMISTRY IN ADSORPED ADDITIVE LAYER

Chair: A. Erdemir & C. Minfray

13:00 - 13:25 (25 min.)

O-05 Wear mitigation with Amine-Based Organic Friction Modifiers

Patrick A. Bonnaud¹, Hiroshi Moritani¹, Tomoyuki Kinjo¹, Norikazu Sato¹, and Mamoru Tohyama¹ (¹ *Toyota Central R&D Labs, Inc., Japan*)

13:25 - 13:50 (25 min.)

O-06 Friction Coefficient of Adsorbed Additive Layer Models Classified by Phase State

Junya Kaba¹, Tomoko Hirayama¹ and Naoki Yamashita¹ (¹ *Kyoto University, Japan*)

SESSION IV ADDITIVE TRIBOCHEMISTRY

Chair: I. Szlfarsca & K. Nakayama

13:50 - 14:15 (25 min.)

O-07 Formation of MoS₂ Flakes from MoDTC-based Molecules in a Severe Lubricated Contact: Molecular and Kinetic Approaches

M. al Kharboutly¹, G. Veryasov², P. Gaval², A. Verchère², J. Galipaud¹, A. Quadrelli², C. Camp², B. Reynard³, M. Cobian¹, T. Le Mogne¹ and C. Minfray¹ (¹ *Ecole Centrale de Lyon, France*, ² *CPE - Université Lyon, France*, ³ *ENS Lyon, France*)

14:15 - 14:40 (25 min.)

O-08 Lubricant Additives in an Inert Atmosphere

Jie Zhang¹, Janet Wong¹ and Hugh Spikes¹ (¹ *Imperial College, UK*)

14:40 - 15:05 (25 min.)

O-09 Self-Assembly of Molecules in Oil Environment

Hitoshi Washizu¹, Kyosuke Kawakita¹, Tomoya Hasegawa¹, Riku Araki¹, Tomohito Horio¹, Takehiro Kobayashi¹, Le Nhu Minh Tue¹, Yoshiki Ishii^{2,1}, Ryuichi Okamoto¹, Kosar Khajeh¹ and Natsuko Sugimura^{3,1} (¹University of Hyogo, Japan, ²Kitasato University, Japan, ³National Institute of Technology, Kagoshima College, Japan)

< **Tea Break (20 min)** >

SESSION V TRIBOCHEMISTRY IN IONIC CRYSTAL

Chair: M.H. Müser & T. Hirayama

15:25 - 15:50 (25 min.)

O-10 On the Hybrid Nature of Lubricious Layers Formed by Ionic Liquids.

¹Sergei Glavatskih (¹KTH Royal Institute of Technology, Sweden, ¹Ghent University, Belgium, ¹University of New South Wales, Australia)

15:50 - 16:15 (25 min.)

O-11 Linking Molecular Structure and Lubrication Mechanisms of Tetraalkylammonium Orthoborate Ionic Liquids

Filippo Mangolini¹, Jieming Yan¹, Hsu-Ming Lien¹ and Kenechukwu Moneke¹ (¹The University of Texas at Austin, USA)

SESSION VI TRIBOCHEMISTRY IN CARBON COATING FILM

Chair: S. Loehle & Y. Momose

16:15 - 16:40 (25 min.)

O-12 Tribochemistry of Water at Boron-doped Amorphous Carbon Interfaces

Stefan Peeters¹, Takuya Kuwahara^{1,2}, Fabien Härtwig³, Stefan Makowski³, Michael Moseler^{1,4}, Gianpietro Moras¹ (¹Fraunhofer IWM, Germany, ²Osaka Metropolitan University, Japan, ³Fraunhofer IWS, Germany, ⁴Institute of Physics, Germany)

16:40 - 17:05 (25 min.)

O-13 Mechanisms of Transfer Film Formation at the Sliding Interface Between Silicon-based Ceramics and Hydrogenated Amorphous Carbon

Takuya Kuwahara^{1,2}, Yun Long³, Thomas Reichenbach², Jean Michel Martin³, Julian Fontaine³, Maria-Isabel De Barros Bouchet³, Michael Moseler² and Gianpietro Moras^{2, (1)} *Osaka Metropolitan University, Japan, ² Fraunhofer IWM, Germany, ³ University of Lyon, Ecole Centrale de Lyon, France)*

SESSION VII TRIBO-INDUCED ELECTROCHEMISTRY

Chair: M. Dienwiebel & M.C. Righi

17:05 - 17:30 (25 min.)

O-14 Effect of Stress on Zinc Phosphate Coatings

Rowena Crockett¹, Mohammad Alinezhadfar^{1,2} and Ueli Angst^{2 (1)} *Empa, Switzerland ²ETH Zurich, Switzerland)*

17:30 - 17:55 (25 min.)

O-15 Growth of Platinum-Oxide Film Induced by Triboelectro-Oxidation of Platinum in Pure Water

Chenxu Liu¹, Zhijun Shi¹, Wengeng Ouyang² and Yonggang Meng^{1 (1)} *Tsinghua University, China, ²Wuhan University, China)*

Announcement for the Welcome Reception

Organizer: Y. Nakanishi & T. Shiota

< **Break (65 min)** >

18:30 – 20:30 (2 hrs.) ← It has been changed from 19:00 – 21:00

Welcome Reception (2 hrs.)

(Organizer: Y. Nakanishi & T. Shiota)
